

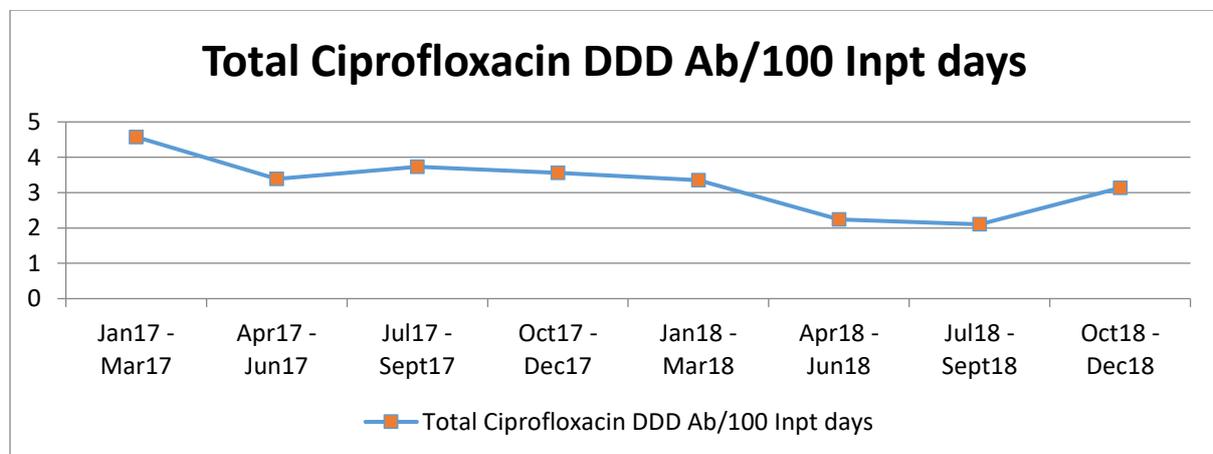
27 February 2019

Fluoroquinolones – are they still an option?

The fluoroquinolones have for many years been a mainstay antimicrobial agent for empiric and targeted antimicrobial therapy covering a variety of infections. Recently the adverse effects of fluoroquinolones have garnered much attention and this has brought the use of these agents into question. There are both serious patient-related adverse events and adverse ecological effects on the hospital microbiome. In the latest warning issued by the FDA fluoroquinolones have shown to increase the risk of aortic rupture or tearing. This risk, at 1 to 2 cases per 10 000 treatment courses, is uncommon in comparison to other adverse events but is potentially life-threatening (1). This adverse effect is concordant with other described effects viz. tendon rupture and aortic dissection, based on the similar pathogenetic mechanisms. This risk is also not dependent on duration of exposure as the study describing this risk showed that 41% of cases developed within the first 10 days of therapy (1).

Given the widespread use based on spectrum of activity and convenience of an oral agent the question arises, is there still a place for fluoroquinolones, and if so what is it? To answer this we must first look at current use and indications for fluoroquinolone therapy.

The graph below demonstrates the overall ciprofloxacin usage for the last 2 years. Ciprofloxacin is the most widely used fluoroquinolone in the hospital. The graph demonstrates a reduction in use over the 2 year period- comparing 2017 (3.82/100 inpatient days vs 2.71/100 inpatient days). If broken down by ward there is one ward which accounts for roughly two thirds of the total use. The reduction of use may be a reflection of reduced susceptibility to the agent although this has not been explored. Nevertheless the reduction in use could be seen as a positive in the context of the aforementioned adverse effects.



DDD – Defined daily doses

In terms of indications for fluoroquinolones, they are still widely used and recommended in the setting of respiratory and genitourinary infections. The South African community-acquired pneumonia guidelines of 2017 recommend fluoroquinolones as a potential first line option for treatment (2).

The option of oral step-down therapy is also appealing for outpatient treatment purposes and for obviating the need for IV access. Fluoroquinolones have important microbiological attributes such as anti-biofilm activity, have good oral bioavailability and excellent distribution/ penetration parameters which make them an ideal choice of agent for certain types of infections.

The armamentarium of antimicrobials is severely limited, especially in terms of Gram negative agents and thus it would be imprudent to simply discard the fluoroquinolones. The treatment of severe infectious diseases often requires selection of the most appropriate and targeted regimen based on both pathogen and type of infection- the reality is that a fluoroquinolone is sometimes the best option!

However, it does require a more circumspect approach to the use of these agents. This approach is two-fold: firstly in terms of the patient and the risk of a serious adverse event; and secondly what are the alternative therapeutic options.

Patients with significant pre-existing risk factors e.g. aortic aneurysm, diabetics should not receive a fluoroquinolone if a suitable alternative is available. If a fluoroquinolone is indicated and is the best available option then patients need to be informed of the potential side effects and what to look out for. Careful review and selection of the most appropriate antimicrobial agent is required rather than a reflexive prescription- there are often alternatives available.

Perhaps the most important consideration is to avoid fluoroquinolones as an empiric antimicrobial agent. It is seldom necessary to use fluoroquinolones empirically and they are better suited for targeted therapy based on microbiologically-guided susceptibility results, where organism and type of infection are known. This way we hold on to a useful and important antimicrobial agent which still has a "selective" place, but reduce unnecessary use and exposure to an agent with the potential for serious adverse events.

Yours faithfully,

The WDGMC AMS team

References

1. Pasternak B, Inghammar M, Svanstrom H. Fluoroquinolone use and risk of aortic aneurysm and dissection: nationwide cohort study. *BMJ*. 2018;360:k678.
2. Boyles TH, Brink A, Calligaro GL, Cohen C, Dheda K, Maartens G, et al. South African guideline for the management of community-acquired pneumonia in adults. *J Thorac Dis*. 2017;9(6):1469-502.